

# National Vital Statistics Reports



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## United States Life Tables, 2008

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The Technical Notes section of this report has been updated (see page 60, left column, last paragraph) to facilitate replication of this work.

### Abstract

**Objectives**—This report presents complete period life tables for the United States by race, Hispanic origin, and sex, based on age-specific death rates in 2008.

**Methods**—Data used to prepare the 2008 life tables are 2008 final mortality statistics; July 1, 2008, population estimates based on the 2000 decennial census; and 2008 Medicare data for persons aged 66–99. The methodology used to estimate the 2008 life tables has been revised from that used for data years 2000–2007. The methodology was refined in two important ways. First, a logistic model rather than a nonlinear least squares model was used to smooth and extrapolate the vital statistics and Medicare blended death rates at the oldest ages. Second, the age at which smoothing is begun was raised from 66 to 85 or so, depending on the population. This modification applies to the life tables for the total population and for the white, black, non-Hispanic white, and non-Hispanic black populations. The methodology used to estimate the life tables for the Hispanic population remains unchanged from that developed for the publication of life tables by Hispanic origin for data year 2006.

**Results**—In 2008, the overall expectation of life at birth was 78.1 years. Between 2007 and 2008, life expectancy at birth increased for all groups considered, although approximately 0.1 years of the increase is due to the change in methodology. Life expectancy increased for both males (from 75.4 to 75.6) and females (80.4 to 80.6) and for the white population (78.4 to 78.5), the black population (73.6 to 74.0), the Hispanic population (80.9 to 81.0), the non-Hispanic white population (78.2 to 78.4), and the non-Hispanic black population (73.2 to 73.7).

**Keywords:** life expectancy • survival • death rates • race

### Introduction

There are two types of U.S. life tables: the cohort (or generation) life table and the period (or current) life table. The cohort life table presents the mortality experience of a particular birth cohort—all persons born in the year 1900, for example—from the moment of birth through consecutive ages in successive calendar years. Based

on age-specific death rates observed through consecutive calendar years, the cohort life table reflects the mortality experience of an actual cohort from birth until no lives remain in the group. To prepare just a single complete cohort life table requires data over many years. It is usually not feasible to construct cohort life tables entirely on the basis of observed data for real cohorts due to data unavailability or incompleteness (1). For example, a life table representation of the mortality experience of a cohort of persons born in 1970 would require the use of data projection techniques to estimate deaths into the future (2,3).

Unlike the cohort life table, the period life table does not represent the mortality experience of an actual birth cohort. Rather, the period life table presents what would happen to a hypothetical cohort if it experienced throughout its entire life the mortality conditions of a particular period in time. For example, a period life table for 2008 assumes a hypothetical cohort that is subject throughout its lifetime to the age-specific death rates prevailing for the actual population in 2008. The period life table may thus be characterized as rendering a "snapshot" of current mortality experience and shows the long-range implications of a set of age-specific death rates that prevailed in a given year. In this report the term "life table" refers only to the period life table and not to the cohort life table.

Life tables can be classified in two ways according to the length of the age interval in which data are presented. A *complete* life table contains data for every single year of age. An *abridged* life table typically contains data by 5- or 10-year age intervals. A complete life table, of course, can easily be aggregated into 5- or 10-year age groups (refer to the Technical Notes at the end of this report for instructions). Other than the decennial life tables, U.S. life tables based on data prior to 1997 are abridged life tables constructed by reference to a standard table (4). This report presents complete period life tables by race, Hispanic origin, race for the non-Hispanic population, and sex.

### Data and Methods

The data used to prepare the U.S. life tables for 2008 are final numbers of deaths for the year 2008, postcensal population estimates for the year 2008, and age-specific death and population



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National Vital Statistics System



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Attachment 26

**Table 5. Life table for white males: United States, 2008—Con.**Spreadsheet version available from: [http://ftp.cdc.gov/pub/Health\\_Statistics/NCHS/Publications/NVSR/61\\_03/Table05.xls](http://ftp.cdc.gov/pub/Health_Statistics/NCHS/Publications/NVSR/61_03/Table05.xls).

Age (years)	Probability of dying between ages $x$ and $x + 1$	Number surviving to age $x$	Number dying between ages $x$ and $x + 1$	Person-years lived between ages $x$ and $x + 1$	Total number of person-years lived above age $x$	Expectation of life at age $x$
	$q_x$	$l_x$	$d_x$	$L_x$	$T_x$	$e_x$
63–64 . . . . .	0.013681	83,260	1,139	82,690	1,571,404	18.9
64–65 . . . . .	0.014789	82,121	1,215	81,513	1,488,713	18.1
65–66 . . . . .	0.016069	80,906	1,300	80,256	1,407,200	17.4
66–67 . . . . .	0.017526	79,606	1,395	78,908	1,326,944	16.7
67–68 . . . . .	0.019123	78,211	1,496	77,463	1,248,036	16.0
68–69 . . . . .	0.020811	76,715	1,597	75,917	1,170,573	15.3
69–70 . . . . .	0.022610	75,119	1,698	74,269	1,094,656	14.6
70–71 . . . . .	0.024538	73,420	1,802	72,519	1,020,387	13.9
71–72 . . . . .	0.026769	71,619	1,917	70,660	947,667	13.2
72–73 . . . . .	0.029448	69,701	2,053	68,675	877,207	12.6
73–74 . . . . .	0.032446	67,649	2,195	66,551	808,532	12.0
74–75 . . . . .	0.035662	65,454	2,334	64,287	741,980	11.3
75–76 . . . . .	0.039058	63,120	2,465	61,887	677,694	10.7
76–77 . . . . .	0.042701	60,654	2,590	59,359	615,807	10.2
77–78 . . . . .	0.046896	58,064	2,723	56,703	556,447	9.6
78–79 . . . . .	0.051757	55,341	2,864	53,909	499,744	9.0
79–80 . . . . .	0.057367	52,477	3,010	50,972	445,835	8.5
80–81 . . . . .	0.063309	49,467	3,132	47,901	394,863	8.0
81–82 . . . . .	0.069561	46,335	3,223	44,723	346,963	7.5
82–83 . . . . .	0.076512	43,112	3,299	41,463	302,239	7.0
83–84 . . . . .	0.084685	39,813	3,372	38,127	260,777	6.5
84–85 . . . . .	0.093731	36,442	3,416	34,734	222,649	6.1
85–86 . . . . .	0.104141	33,026	3,439	31,306	187,915	5.7
86–87 . . . . .	0.115853	29,587	3,428	27,873	156,609	5.3
87–88 . . . . .	0.128581	26,159	3,364	24,477	128,736	4.9
88–89 . . . . .	0.142346	22,795	3,245	21,173	104,259	4.6
89–90 . . . . .	0.157154	19,550	3,072	18,014	83,087	4.2
90–91 . . . . .	0.172995	16,478	2,851	15,053	65,072	3.9
91–92 . . . . .	0.189837	13,627	2,587	12,334	50,020	3.7
92–93 . . . . .	0.207629	11,040	2,292	9,894	37,686	3.4
93–94 . . . . .	0.226298	8,748	1,980	7,758	27,791	3.2
94–95 . . . . .	0.245746	6,768	1,663	5,937	20,033	3.0
95–96 . . . . .	0.265856	5,105	1,357	4,427	14,096	2.8
96–97 . . . . .	0.286493	3,748	1,074	3,211	9,670	2.6
97–98 . . . . .	0.307502	2,674	822	2,263	6,459	2.4
98–99 . . . . .	0.328719	1,852	609	1,547	4,196	2.3
99–100 . . . . .	0.349975	1,243	435	1,026	2,648	2.1
100 and over . . . . .	1.000000	808	808	1,623	1,623	2.0

SOURCE: CDC/NCHS, National Vital Statistics System.

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